



PCT

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/088,187A

DATE: 04/15/2003
TIME: 13:52:40

#12

Input Set : A:\p02825.app
Output Set: N:\CRF4\04152003\J088187A.raw

```

3 1100 APPLICANT: Dean, Caroline
4      Levy, Yaron Y
5 1200 TITLE OF INVENTION: Methods and Means for Modification of Plant Flowering
6      Characteristics
7 1300 FILE REFERENCE: 0380-P02825US0
11 1400 CURRENT APPLICATION NUMBER: US 10/088,187A
12 1410 CURRENT FILING DATE: 2000-03-15
14 1500 PRIOR APPLICATION NUMBER: PCT/GB00/03525
15 1510 PRIOR FILING DATE: 2000-09-13
17 1500 PRIOR APPLICATION NUMBER: GB 9922071.7
18 1510 PRIOR FILING DATE: 1999-09-17
20 1600 NUMBER OF SEQ ID NOS: 48
21 1700 SOFTWARE: PatentIn Ver. 2.1
24 2100 SEQ ID NO: 1
25 2110 LENGTH: 5000
26 2120 TYPE: DNA
27 2130 ORGANISM: Arabidopsis thaliana
28 4000 SEQUENCE: 1
30 tttaaaatgc gaattgggat ttaagaaaaa ttctcatcaa atatttatca ttagtgtata 60
31 tatatcagtg ttttacattt gttaatctta aataataaac cgaatctgaaa agttgataaa 120
32 tgggttggtc aaagacaaaa tatatctcca aacaaatcac gtgattgoot tcaacttgcc 180
33 aaggggttcaa agatttaaca aattttttaa aacacaaact taacccaaga atacacaaga 240
34 acagagtggt ggtaaacata caagttaatg agttattcaa atgagatttt caatatcatt 300
35 cttcttcagc cagtcacaag aagccaaagt taagccatta gaggaagttt ataaaacgac 360
36 aaaaactggt tagatacaaa gaatactagc taatgtgttt caacaaaactt caaattgaag 420
37 atacgttaca ttcattattt tcaattcaga gattgattat tcaaatattt tttttactg 480
38 tgatacatat atacacacat gttttgcttt tctatgatto tatctacatt ttcatacagt 540
39 tgaataatgt atgtatgaat cagatgcaa tttcttcat tatgttgaa taaaatgott 600
40 ttggacatgc atgogatatt ggaatcaatt ttggattcta ttttaaaaaa ccagcgagtt 660
41 ttgttgcttg caatttttaa ttaggcatca agaatttcta aaatgcacgc gaactggtga 720
42 aaagaggaat gtttaogttt aaccccttat tttcttacag ctcataagga taactgtcaga 780
43 agacagaacc aaggtctctt gaatataaat tggaaatcac ttaaacataa tgttatgaac 840
44 aatgatggcc aacgggttagc ccaaaactaat taactacaag tcaagttcca atattctaag 900
45 gagaaataat agtatactaa acatacatta gagagggtta actttttttt ggatttaagt 960
46 ggtatgcat aggtatttta ttcttaagta taactattaa ctgtagctag atttatacaa 1020
47 gaaatacata aaactttatg catgtgaggt aacatgaat atactacat gttgcaatcg 1080
48 attatatabg ttgtatttg attctcttat acatgtttta actgtctatt ctctaagtat 1140
49 atacatacaa ttaatactgt ggcatgagt ttatgataag acttttcttt tggagacacg 1200
50 ctttgttttc ctttcaact atatttgtct atagggttca gacggtaaac tagtttataa 1260
51 gtgtttttat atgttctaaa caaaattgag atttttcgga acggtatgat ctgtttgcaa 1320
52 ataaggaggt atatatataa gtatcaata tatttgttgt tataaggcaa taatatattt 1380
53 totgagatat tgcgtgttac aaaaaagaaa tatttgttta gaaaaaaaaa gatggtcgaa 1440
54 aaaggggagt aggtgggggc ggtgggtttt tgattagtta ataaaagaaa ccacacagat 1500

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/088,187A

DATE: 04/15/2003

TIME: 13:52:40

Input Set : A:\p02825.app

Output Set: N:\CRF4\04152003\J088187A.raw

```

55 gaactacoga ttogactcaa cgagtctaac gagctaacac agattcaact cgtctogagct 1560
56 tegtttttatg acaagttggg tttttttttt tttttttaat tttttcatct tcttggggtt 1600
57 ggttggggtoa ctcttcaggt caggtgtgtg aaaaagaaaag aaagaaaaga gagattgttg 1680
58 tgttgtaaac cctttgaact aaatctaatt aactttttta acacaacaaa actccttcag 1740
59 atctgaaaag gttctctctc tctcttagtc tctttgtctt tttattctcc gtctgtgttt 1800
60 catgatctga ctctctgtgt ctctctctct ctctctctct tctatttttt tcttactctg 1860
61 tcactgttgt gtctgaacat gccaagcctt tctctccata agttgatttt ctcatcact 1920
62 atccaagaaa aaagtctggg aacttactct ctctctctct ctctctctct gttctctctt 1980
63 tctctactct tcaagttttt gattttgttg gaaattgagg gttttcaagg ttggaattct 2040
64 ggtgaaagag ttgttaagat tatgcttgtt gaaactcttg ctctgatttt tacaattcac 2100
65 ttgtattgat tcttgtaag aatcgagctc aggttggtct tttatctct tactctctcc 2160
66 tgttttgggt aatgaaaaga agtccactt ttgaactctg tgttgtctta ttggtcaaat 2220
67 gagaatttgt ggttttccaa tggaaagtct caagacagtt tcttttgggt actggtgtgtg 2280
68 tttggtggga aattggttat ttgatgttat atctgtactc tgacagcata ttgtgtgtag 2340
69 tttgggaatt tttttttttt ttttgagtga ttgacttttc ggaggacgat ttgattctgt 2400
70 cagattgata aaattctctc tgaggagaaa aagttgagat ctgttttatg tttctctact 2460
71 ataaatgtct gttttgttta ctctattttg actgtttttt ctgtttgact taggaatctc 2520
72 tgagatttta gactctctat ctgactctgt gtggttgtgt agtgaatccc taaaactgag 2580
73 tagttgaact gtcttgaaag ctctctatga ttgtgtctat gttttaaagt tgtctacttc 2640
74 atttgataca gtgattagtc atcaatttga cagattctcc caagagcatt gttttgaaca 2700
75 aatccaaatt tcttagctc tccatttggc atttaagtga ctgatttttc totggaataa 2760
76 tgattctgat taacacaggg atttatgttg aaccaagttt gcaaattatt aatgtgataa 2820
77 gatcatagga gctgtgtaat caatctatct agagataaat gtaacctttt acatgtgtac 2880
78 taatggactg tgtctctctg ttgatgctt ctctaaaact aatatggcc ttttggtttg 2940
79 tgttttcaaa ctaggtaaa cgtctgtctc ttcagctact gtgtctattg gatgtctttg 3000
80 ctgaaaaatg tctgttttga tttgatgttc tggcaatatt ctgtgtctgt ottatagata 3060
81 ttgtggacat ttatctcatt atctgtctct ttatctctca taccggcctg ottgtgcaga 3120
82 ggttccaga taagttctgt agtaaatcca aggatgagct ttoggtgtgt gttgcaactc 3180
83 cagtaactga tggctcatt ttgtgtgtg gactaaggaa agctgacaa aaaatttggg 3240
84 tccaagatgg ttggcaagag ttgtttgaac gtaactccat tggcatttgt tatcttttga 3300
85 ttttagata tgaaggaaac tctgcttcca gctctctat tttcaattta tccaactctg 3360
86 agatcaatta ccattccacc ggtctcattg attcggctca caaacacttc aaacgggccc 3420
87 gtttgtctga agaacttgaa gatgaagatg ccgaggtcat ctttctctct totgtgtacc 3480
88 catcaactct tcttgagct acagtaaccg ccaacaaaagg gtatgctagt ttagccatcc 3540
89 aaacctctgt cactggacca gtttaagggt atatttataa ccaactgatt ccttttatct 3600
90 atogctgatt acgctcttta ccaattcttt gaggttgatg ctctgatatt tcttctctc 3660
91 cagctgaaga gccaacggca accccaaaaa taacctaaaa gagagggagg aagaagaaaa 3720
92 atgttgatcc tggtaagcac ctttctctct tgaatgtct cagactctgt ttcagaggat 3780
93 tcaagatctc tctctcatga taatatata cttttgatat tgtctctaca gaggaataa 3840
94 actcatcagc tctcgagat gatgatccag agaactcttc aaagtctctc gagagtgtct 3900
95 ctgogagaaa gagaaactgt actgcagaag aaagagagag agcatcact gcagccaaaa 3960
96 cgttogaacc acaaaactct tctctcagag ttgttctgog accatctat ctatacagag 4020
97 gttgcactat ggttaaaaaa aaactatcta ggaagaotta atcttatctg tgtctctact 4080
98 gatctctaaa agaactcttc tgttctgtt tctctcaaca gtatctctct tctgggtttg 4140
99 ctgagaagta cctaagtggg atctctgggt tcatcaaaag ccagcttggt gagaaacat 4200
100 ggcctgtctg atgtctctac aaagccggga gagccaaatt cagtcaagga ttgtaagcat 4260
101 tcactctaga gaacaaacta ggagaaggag actctctgtt gtttgagctg ctcaagaaca 4320
102 gagattctgt tttgaaagt acagctcttc gactcaacga gtaactctga acaagcatt 4380
103 atggtgtgat cttctggat ttccaagtac aatgtctgt aggagtatct taatttaaaa 4440

```

RAW SEQUENCE LISTING

DATE: 04/15/2003

PATENT APPLICATION: US/10/088,187A

TIME: 13:52:40

Input Set : A:\p02825.app

Output Set: N:\CRF4\04152003\J088187A.raw

```

104 acaactaaaa aactctcttc tggctctgtt cattattgag tcagtgtctc gttctctctc 4500
105 tgggttttac ttgtgttat agatgtggat aagttgtttt taactcatta tatataacct 4560
106 cctdaggtaga actcaaatg ttgagtaga acaaacaaaag ttagggttta agaagaagtc 4620
107 tgtaaatacc taatctccat caaatctgag tagaaagaca aactgtcttg gtggaataca 4680
108 aggaagggaac ttgagataac aaacttaaga atagcctcca agccaaagtc tagaatttga 4740
109 tgaatttgtt gttgatacac ctctgagata attggaaaac ctcttcctgc agtttgcttg 4800
110 aggatactgg tgaaaatggg agtattgaag gaaaatgcct atataagatt gtagggtggga 4860
111 actgtggtag cagacacaaac actgtctctc tagacatata ctgtaccaga catgttttga 4920
112 tcaataaaat taaaaaaaag aaaaacctgt gtaaatcaag caaggaacaa ctacaatat 4980
113 acaactcttat tgagatata 5000
114 <210> SEQ ID NO: 3
115 <211> LENGTH: 27
116 <212> TYPE: DNA
117 <213> ORGANISM: Arabidopsis thaliana
118 <214> FEATURE:
119 <215> NAME/KEY: CDS
120 <216> LOCATION: (1)..(27)
121 <400> SEQUENCE: 3
122 gat ggt cat gtt tgg cgt gta gga cta 27
123 Asp Gly His Val Trp Arg Val Gly Leu
124 1 5
125 <210> SEQ ID NO: 3
126 <211> LENGTH: 3
127 <212> TYPE: PRT
128 <213> ORGANISM: Arabidopsis thaliana
129 <400> SEQUENCE: 3
130 Asp Gly His Val Trp Arg Val Gly Leu
131 1 5
132 <210> SEQ ID NO: 4
133 <211> LENGTH: 27
134 <212> TYPE: DNA
135 <213> ORGANISM: Artificial Sequence
136 <214> FEATURE:
137 <215> OTHER INFORMATION: Description of Artificial Sequence: vrnl-1
138 mutation
139 <220> FEATURE:
140 <221> NAME/KEY: CDS
141 <222> LOCATION: (1)..(15)
142 <400> SEQUENCE: 4
143 gat ggt cat gtt taa cgtgtaggaa ta 27
144 Asp Gly His Val
145 1
146 <210> SEQ ID NO: 1
147 <211> LENGTH: 4
148 <212> TYPE: PRT
149 <213> ORGANISM: Artificial Sequence
150 <214> FEATURE:
151 <215> OTHER INFORMATION: Description of Artificial Sequence: vrnl-2
152 mutation

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/088,187A

DATE: 04/15/2003

TIME: 13:52:40

Input Set : A:\p02825.app

Output Set: N:\CRF4\04152003\J088187A.raw

```

171 <400> SEQUENCE: 5
172 Asp Gly His Val
173 1
174 <210> SEQ ID NO: 6
175 <211> LENGTH: 17
176 <212> TYPE: DNA
177 <213> ORGANISM: Arabidopsis thaliana
178 <214> FEATURE:
179 <221> NAME/KEY: CDS
180 <222> LOCATION: (1)..(17)
181 <400> SEQUENCE: 5
182 aag aaa gat gat gat cct gag gaa ata
183 Lys Lys Asn Ala Asp Pro Glu Glu Ile
184 1 5
185 <210> SEQ ID NO: 7
186 <211> LENGTH: 17
187 <212> TYPE: DNA
188 <213> ORGANISM: Arabidopsis thaliana
189 <400> SEQUENCE: 7
190 Lys Lys Asn Ala Asp Pro Glu Glu Ile
191 1 5
192 <210> SEQ ID NO: 8
193 <211> LENGTH: 17
194 <212> TYPE: DNA
195 <213> ORGANISM: Artificial Sequence
196 <220> FEATURE:
197 <223> OTHER INFORMATION: Description of Artificial Sequence: vrnl-2
198 mutation.
199 <210> FEATURE:
200 <221> NAME/KEY: CDS
201 <222> LOCATION: (1)..(27)
202 <400> SEQUENCE: 8
203 aag aaa atg ctg atc ctg agg aaa taa
204 Lys Lys Met Leu Ile Leu Arg Lys
205 1 5
206 <210> SEQ ID NO: 9
207 <211> LENGTH: 9
208 <212> TYPE: DNA
209 <213> ORGANISM: Artificial Sequence
210 <220> FEATURE:
211 <223> OTHER INFORMATION: Description of Artificial Sequence: vrnl-2
212 mutation.
213 <400> SEQUENCE: 9
214 Lys Lys Met Leu Ile Leu Arg Lys
215 1 5
216 <210> SEQ ID NO: 10
217 <211> LENGTH: 1495
218 <212> TYPE: DNA
219 <213> ORGANISM: Arabidopsis thaliana

```

27

27

RAW SEQUENCE LISTING

DATE: 04/15/2003

PATENT APPLICATION: US/10/088,187A

TIME: 13:52:40

Input Set : A:\p02825.app

Output Set: N:\CRF4\04152003\J088187A.raw

242 2220 FEATURE:

243 2221 NAME/KEY: CDS

244 2222 LOCATION: (769)..(1294)

246 2400 SEQUENCE: 10

```

247 tcttgggttt gattgggtca ctcttcaggt caggtgtgta aaaaagaaag aaagaaaaga 60
248 gagatgttg tttgtaacc cctttgacta aaatctaag aacttttta acacaacaaa 120
251 actcttcag atctgaaagg gttcttcttc tctcttagtc tctttgtcct ttattctcc 180
253 gtcgtgttt catgatgga ctctctgttc ttctcttctt ctctctcttc ttctattttt 240
255 tcttacttgg tcaatgttgt gtctgaac atg cca cgc cct ttc ttc cat aag 300
256                                     Met Pro Arg Pro Phe Phe His Lys
257                                     1               5
258 ttg att ttc tca tcc act atc caa gaa aaa cgt ctg agg gtc cca gat 360
259 Leu Ile Phe Ser Ser Thr Ile Gln Glu Lys Arg Leu Arg Val Pro Asp
261 10               15               20
262 aag ttt gtg act aaa ttc aag gat gag ctt tgg gtt got gtt gaa ctg 420
263 Lys Phe Val Ser Lys Phe Lys Asp Glu Leu Ser Val Ala Val Ala Leu
265 25               30               35               40
266 aca cta cct gat ggt cat gtt tgg cgt gta gga cta agg aaa got gac 480
267 Thr Val Pro Asp Gly His Val Trp Arg Val Gly Leu Arg Lys Ala Asp
269 45               50               55
271 aac aaa att tgg ttt caa gat ggt tgg caa gag ttt gtt gac cgt tac 540
272 Asn Lys Ile Trp Phe Gln Asp Gly Trp Gln Glu Phe Val Asp Arg Tyr
274 60               65               70
275 tcc att cgc att ggt tat ctt ttg att ttt aga tat gaa gga aac tct 600
276 Ser Ile Arg Ile Gly Tyr Leu Leu Ile Phe Arg Tyr Glu Gly Asn Ser
278 75               80               85
279 ggc ttc agc gtc tac att ttc aat tta tcc cac tct gag atc aat tac 660
280 Ala Phe Ser Val Tyr Ile Phe Asn Leu Ser His Ser Glu Ile Asn Tyr
282 90               95               100
283 cat tcc aac ggt ctg atg gat tcc ggt cac aac cac ttc aaa cgc ggc 720
284 His Ser Thr Gly Leu Met Asp Ser Ala His Asn His Phe Lys Arg Ala
286 105               110               115               120
287 cgt ttg ttc gaa gac ctt gaa gat gaa gat ggc gag gtc atc ttt cct 780
288 Arg Leu Phe Glu Asp Leu Glu Asp Glu Asp Ala Glu Val Ile Phe Pro
290 125               130               135
291 tct tct gtg tac cca tca cca ctt cct gag tct aca gta cca gcc aac 840
292 Ser Ser Val Tyr Pro Ser Pro Leu Pro Glu Ser Thr Val Pro Ala Asn
294 140               145               150
295 aaa ggc tat got agt tca gcc atc caa acc ttg ttc act gga cca gtt 900
296 Lys Gly Tyr Ala Ser Ser Ala Ile Gln Thr Leu Phe Thr Gly Pro Val
298 155               160               165
299 aca gat gaa gag cca aag cca acc cca aaa ata cct aaa aag aga ggg 960
300 Lys Ala Glu Glu Pro Thr Pro Thr Pro Lys Ile Pro Lys Lys Arg Gly
302 170               175               180
303 agg aag aag aaa aat got gat cct gag gaa ata aac tca tca got cgg 1020
304 Arg Lys Lys Lys Asn Ala Asp Pro Glu Glu Ile Asn Ser Ser Ala Pro
306 185               190               195               200
307 cga gat gat gat cca gag aac cgt tca aag ttc tac gag agt got tct 1080
308 Arg Asp Asp Asp Pro Glu Asn Arg Ser Lys Phe Tyr Glu Ser Ala Ser

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/088,187A

DATE: 04/15/2003

TIME: 13:52:41

Input Set : A:\p02825.app

Output Set: N:\CRF4\04152003\J088187A.raw